Memory for Scenes

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Introduction

Binding

- Do the objects that we see bind together in our memory or bind to the scene individually?
  - Binding-the process of relating information together in perception or memory
  - Evidence for binding arises when one detail serves as a useful cue for another detail in a memory

Previous Research

- Previous research has focused on studying this concept on a small scale such as remembering the features of an object
- When previous research has failed to find evidence of direct binding the object has not been attended properly

The Current Study

- Are objects in scenes bound directly to each other in addition to the broader scene context?
  - Does this binding depend on the attention given to the object?

Why should we study this?

- Learning how we remember objects in scenes can help us determine the reliability of eyewitness testimonies in criminal investigations
- Increased knowledge of the structure of memories can greatly improve the way we treat and care for those with memory disorders such as Alzheimer's

Study Phase

- A room is presented on the screen and participants follow the red circle as it moves around the room
  - Red circle draws attention to 7 items in the room
  - Six other items are not circled and are used as "unattended" objects at test
- A circled object is then shown on the screen and participants must indicate whether they saw the item in the scene
  - This serves as an attention check

- This task is repeated 10 times before moving on to the second phase of the experiment

Testing Phase

- This phase examines the effect of context on memory retrieval
- Designed to test memory for objects that were encoded in the first phase
- An attended object, an unattended object, or a novel item is presented on the screen accompanied by an attended cue, an unattended cue, or no cue at all
- Participants indicate if they remember the object from the first phase and whether it was circled
- 90 item test trials (10 per cue-item type)

Attended - Attended

No Cue - Attended

Unattended - Attended

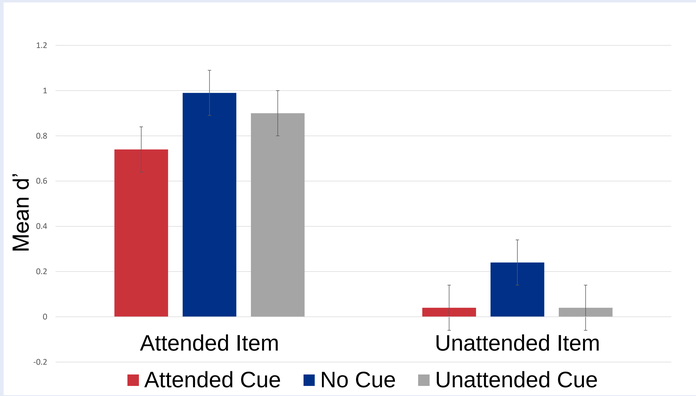
Attended - Novel

Cue/Item Combinations:

- Attended Cue – Attended Item
- Attended Cue – Unattended Item
- Attended Cue – Novel Item
- Unattended Cue – Attended Item
- Unattended Cue – Unattended Item
- Unattended Cue – Novel Item
- No Cue – Attended Item
- No Cue – Unattended Item
- No Cue – Novel Item

Results

- The results of this study are considered significant when $p < .05$
- Preliminary results indicate that objects that were attended are remembered significantly better than unattended objects
  - $p < .01$
- There is marginally significant effect of cue type
  - $p = .09$
  - This result may become significant as the sample size continues to increase
  - This may seem like evidence *against* direct binding, but this is likely due to participant strategies



Conclusion

- Binding, or the relationship between objects in memory, is influenced by one's attention to the objects
  - Attended objects are remembered better than unattended objects
- Applied to eyewitness testimony, this research can be used to predict the reliability and accuracy of eyewitness accounts
- Since individuals with memory disorders have difficulty remembering new environments, direct binding could be used to help them navigate their surroundings using object associations

References

1. Starns & Hicks (2005)
2. Starns & Hicks (2008)
3. Hicks & Starns (2016)
4. Meiser & Sattler (2007)
5. Uncapher, Otten, & Rugg (2006)
6. Meiser & Sattler (2007)
7. Meiser &Bröder (2002)
8. Meiser (2014)
9. Murnane, Phelps, & Malmberg (1999)
10. Lampinen, Copeland, & Neuschatz (2001)
11. Hollingworth (2007)
12. Martin (2013)